

What is claimed is:

1. A method for controlling the polymer architecture of a copolymer comprising the steps of:

5 a) conducting a test polymerization of co-monomers comprising:

- 1) charging the slower reacting monomer to a reactor, and beginning the polymerization;
- 2) delay-feeding the faster reacting monomer(s) at a constant rate over a period of time;
- 3) measuring periodically the residual monomer level of the slower reacting monomer;
- 4) calculating the percent of slow monomer used up in each time period; and

10 5) calculating a feed rate for the second monomer to obtain the desired polymer architecture; and

b) conducting a polymerization of said co-monomers comprising:

- 1) charging the slower reacting monomer to a reactor, and beginning the polymerization;
- and

15 2) delay-feeding the faster reacting monomer(s) at the variable rate determined in step a)4), to produce a copolymer having the desired polymer architecture.

2. The method of claim 1 wherein the feed rate of the second monomer is rate-matched with the first polymer, producing a random copolymer having a nearly uniform composition.

3. The method of claim 1 wherein the feed rate of the second monomer is not rate-matched, producing a tapered polymer.

4. The method of claim 1 wherein three or more monomers are used to produce a terpolymer, wherein separate steps a) 1-5 are conducted for monomer, and feed rates of each monomer are calculated to be used in step b).

5. The method of claim 1 wherein the period of time in step a)2) is in the range of from 2 to 10 hours.